

**Amendments to the Drawings**

The attached sheet of drawings includes changes to Fig. 5. This sheet, which includes Fig. 4-6, replaces the original sheet including Fig. 4-6. In Figure 5, previously omitted reference numeral 23 has been added. Figure 8 has been added to show the features specified in claim 5. No new matter has been added.

Attachment:            Replacement Sheet 1  
                             Annotated Sheet Showing Changes  
                             New Sheet 4

## **Remarks/Arguments**

### **The Drawings**

The Examiner has objected to the drawings because they fail to include reference sign 23, mentioned in the description on page 4, line 20. Figure 5 has been amended to include the unintentionally omitted reference sign. No new matter has been added to the application.

The Examiner has further objected to the drawings under 37 CFR 1.83(a) as failing to show every feature of the invention specified in the claims. Figure 8 has been added to illustrate the features specified in the originally filed claim 5 and described on page 2, lines 31-33. Furthermore, descriptions of the new Figure 8 have been added to the specification and brief description for consistency. No new matter has been added.

### **35 U.S.C. §102**

Claims 1-4 stand rejected under 35 U.S.C. §102(e) as being anticipated by Herve et al (US 6,304,220B1). It is submitted that the amended claim 1 is not anticipated by Herve et al. because it does not disclose, teach or suggest a "Dielectric resonator antenna comprising a single block of dielectric material of specific permittivity" as recited by the currently amended claim 1.

The present invention teaches a dielectric resonant antenna constituted by a block of dielectric such as ceramic that radiates per se. The DRA is fed through a slot via a microstrip line. (page 4, lines 36-37) The DRA will resonate at certain frequencies, depending on the dimensions of the dielectric block and the specific permittivity of the dielectric. DRAs have numerous advantages over microstrip antennas, such as smaller size and inherently low loss at resonant frequencies.

It is submitted that Herve does not teach or remotely suggest the solution recited by the currently amended claim 1. The Examiner mentions that Herve discloses in Fig. 1 dielectric resonator antenna. In fact, as clearly mentioned in US 6304220, Herve discloses a microstrip patch antenna comprising at least a dielectric substrate between a conductive layer referred to as the "ground plane" (A in figure 1) and another conductive layer referred as the "patch" (L in figure 1). (See more particularly column 1 – lines 36 to 43 ; column 5 – lines 63 to 67 ; column 6 – lines 6 to 12).

In Herve, the patches EL, EH having the form of resonant strips are connected to two short-circuit strips (RCE) (see column 7 – line 64 to column 8 – line 13). These strips are also connected to the processor unit. Therefore, the metalizations taught in Herve are resonant radiating structures that conduct the signal to be radiated. In the present invention, the second metallic layer is not connected to any unit because this metallic layer is used as a reflective element to decrease the physical dimensions of the DRA.

Claims 1 and 3-5 stand rejected under 35 USC 102(e) as being anticipated by Kundu et al (US 6,621,381). It is submitted that the amended claim 1 is not anticipated by Kundu et al. because it does not disclose, teach or suggest a "Dielectric resonator antenna comprising a single block of dielectric material of specific permittivity" "having a first face intended to be mounted on earth plane and covered with a first metallic layer, wherein at least one second face perpendicular to the first face is covered with a second metallic layer contacting said metallic layer covering said first face" as recited by the currently amended claim 1.

The invention recited by the present claim 1 teaches a DRA having a first face covered in a metallic layer and a second face, *perpendicular* to said first metallic layer covered with a second metallic layer. The metallic layers as taught by the present invention are used to reduce the physical dimensions of the DRA by creating reflective surfaces, thereby changing the boundary conditions and, thus, having the effect of lengthening the field lines inside the DRA.

In the system taught in Kundu, as explained column 15 – lines 30 to 50, the  $\lambda/4$  dielectric resonators 150 and 151 are constituted by a dielectric block 1500(1510), a metal layer 1501(1511) coated on top surface of the dielectric block, a metal layer 1502(1512) coated on a bottom surface of the dielectric block. The layers 1504(1514) are excitation electrodes and there are cut out 1502a(1512a) to isolate the excitation electrode 1504 from the bottom grounded metal layer 1502(1512). As the  $\lambda/4$  resonator comprises a metal layer on top surface and a metal layer on bottom surface, this resonator is not a DRA, i.e. a block of dielectric material with specific permittivity  $\epsilon_r$  resonating per se. The layers 1502c or 1502b are extensions for easily connecting the layer 1502 to the ground by soldering. They are not used to decrease the overall dimensions of the dielectric block.

It is submitted that Kundu does not teach or remotely suggest the solution recited by the present claim 1. Kundu teaches a dielectric resonator wherein "the dielectric resonator according to the present invention can be applied to an antenna by reducing a relative dielectric constant of dielectric material if necessary, although the size of the resonator will increase with the decrease of the dielectric constant or with the increase of the thickness for the same frequency application." (Col. 15, lines 1-13) Kundu does not teach or remotely suggest using metallic layers to decrease the physical dimensions of a DRA while maintaining the same resonant properties.

**35 U.S.C. §103**

Claims 6-9 stand rejected under 35 USC 103(a) as being unpatentable over Kundu (US6621381) in view of Adahi et al (US6198450). It is submitted that neither Kundu, nor Adahi teach or suggest a "Dielectric resonator antenna comprising a single block of dielectric material of specific permittivity" "having a first face intended to be mounted on earth plane and covered with a first metallic layer, wherein at least one second face perpendicular to the first face is covered with a second metallic layer contacting said metallic layer covering said first face" as recited by the currently amended claim 1.

Kundu does not teach the solution recited by the currently amended claim 1 as was illustrated previously in this response. Adahi teaches a method of feeding a DRA, but does not teach or suggest using metallic layers to decrease the physical dimensions of a DRA while maintaining the same resonant properties. Since neither Kundu or Adahi teach or suggest a DRA "having a first face intended to be mounted on earth plane and covered with a first metallic layer, wherein at least one second face perpendicular to the first face is covered with a second metallic layer contacting said metallic layer covering said first face" as recited by the currently amended claim 1, it is submitted that claim 1 is allowable in light of Kundu or Adahi.

In light of the above arguments and amendments, it is submitted that claim 1 is allowable over Herve, Kundu, and Adahi, and any combination thereof. Such action is respectfully requested.

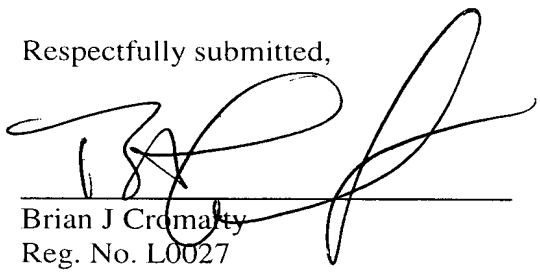
It is submitted that claim 6 is allowable for at least the same reasons the claim 1 is allowable. Furthermore, since claims 2-5 and 7-9 are dependant from allowable claims 1

and 6, it is submitted that they are allowable for at least the same reasons that claims 1 and 6 are allowable. Such action is respectfully requested.

Having fully addressed the Examiner's rejections it is believed that, in view of the preceding amendments and remarks, this application stands in condition for allowance. Accordingly then, reconsideration and allowance are respectfully solicited. If, however, the Examiner is of the opinion that such action cannot be taken, the Examiner is invited to contact the applicant's representative at (609) 734-6804, so that a mutually convenient date and time for a telephonic interview may be scheduled.

No fee is believed due. However, if a fee is due, please charge the additional fee to Deposit Account 07-0832.

Respectfully submitted,

  
By: Brian J Cromarty  
Reg. No. L0027  
Phone (609) 734-6804

Patent Operations  
Thomson Licensing Inc.  
P.O. Box 5312  
Princeton, New Jersey 08543-5312  
October 10, 2005

CERTIFICATE OF MAILING

I hereby certify that this amendment is being deposited with the United States Postal Service as First Class Mail, postage prepaid, in an envelope addressed to Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on:

Oct. 10, 2005  
Date

Lori M. Klewin  
Lori M Klewin